IN THE CLAIMS:

1-29 (cancelled)

1   30.   (Previously Presented)   A router for use in routing packets over a network, the
2   router supporting a plurality, X, of classes of service and including:
3   A. a plurality of input ports for receiving packets over the network;
4   B. a plurality of output ports for transferring packets over the network;
5   C. a classifier for assigning packets received by the input ports to X * Y classes
6   of service, where * represents multiplication, and mapping the XY classes of service to
7   the X classes of service that are supported by the router, the classifier assigning to the
8   packet one of Y associated levels of priority, wherein each level of priority is associated
9   with a different probability of packet loss;
10   D. a buffer subsystem for retaining the packets in class of service per output port
11   queues based on probabilities of discard associated with the X * Y classes of service; and
12   E. a scheduler for transferring the packets from the buffer subsystem through
13   each of the output ports based on the X classes of service.

1   31.   (Original) The router of claim 30 wherein the buffer subsystem includes multiple
2   storage locations and links available storage locations in a free queue.

1   32.   (Original) The router of claim 31 wherein the buffer subsystem includes a proces-
2   sor that determines:
3   i. a new weighted average depth for the free queue, and
4   ii. a probability of discard for a given packet if the new weighted average queue
5   depth falls below a predetermined maximum threshold associated with the class of ser-
6   vice to which the packet is assigned by the classifier.

1   33.   (Original)   The router of claim 32 wherein the buffer subsystem discards a

2   given packet if the associated new weighted average depth for the free queue falls below

3   a minimum threshold associated with the class of service to which the packet is assigned.

1   34.   (Original)   The router of claim 33 wherein the buffer subsystem processor cal-

2   culates the probability of discard as $P_d = c-(m*A_{NEW})$ where c is an intercept and m is a

3   slope that is associated with a line that plots average free queue depth versus probability

4   of discard for the class of service to which the packet is assigned, and A_{NEW} is the new

5   weighted average depth of the free queue.

1   35.   (Original)   The router of claim 34 wherein the buffer subsystem processor cal-

2   culates the new weighted average depth of the free queue as $A_{NEW} = A_{CURRENT} + w(I-$

3    $A_{CURRENT})$ where w is a weighting factor, I represents the instantaneous depth of the free

4   queue and $A_{CURRENT}$ is the current weighted average depth of the free queue.

1   36.   (Previously Presented) The router of claim 30 wherein the scheduler selects from

2   the buffer subsystem packets for transfer based on weighting factors associated with the

3   respective X classes of service.

1   37.   (Previously Presented)   A router for use in routing packets over a network, the

2   router supporting a plurality, X, of classes of service and including:

3   A. a plurality of input ports for receiving packets over the network;

4   B. a plurality of output ports for transferring packets over the network;

5   C. a multiple storage location buffer for retaining packets to be transferred

6   through the output ports;

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7   D. a buffer subsystem for retaining the packets in class of service per output port

8   queues based on probabilities of discard associated with X*Y classes of service, where Y

9   represents a number and * represents multiplication; and

10   E. a scheduler for transferring the packets from the buffer subsystem through each

11   of the output ports based on the X classes of service that the router supports.

1   38.   (Previously Presented) The router of claim 37 further including a classifier for:

2   i. assigning packets received by the input ports to X*Y classes of service,

3   ii. associating the packets with the X classes of service that are supported by the

4   router, and

5   iii. assigning to the packet one of Y associated levels of priority, wherein each

6   level of priority is associated with a different probability of packet loss.

1   39.   (Previously Presented) The router of claim 37 wherein the buffer subsystem in-

2   cludes a processor that determines

3   i. a new weighted average queue depth for a free queue that links available buffer

4   storage locations, and

5   ii. a probability of discard for a given packet if the new weighted average free

6   queue depth falls below a predetermined maximum threshold associated with the class of

7   service to which the packet is assigned.

1   40.   (Original) The router of claim 39 wherein the buffer subsystem processor calcu-

2   lates the probability of discard as $P_d = c-(m*A_{NEW})$ where c is an intercept and m is a

3   slope that are associated with a line that plots average free queue depth versus probability

4   of discard for the class of service to which the packet is assigned, and A_{NEW} is the new

5   weighted average depth of the free queue.

1   41.   (Original) The router of claim 40 wherein the buffer subsystem processor calcu-

2   lates the new depth of the weighted average free queue as $A_{NEW} = A_{CURRENT} + w (I-$

3    $A_{CURRENT})$ where w is a weighting factor, I represents the instantaneous depth of the free

4   queue and $A_{CURRENT}$ is the current weighted average depth of the free queue.

1   42.   (Previously Presented) The router of claim 40 wherein the buffer subsystem dis-

2   cards a given packet if the new weighted average free queue depth falls below a mini-

3   mum threshold associated with the class of service to which the packet is assigned.

1   43.   (Previously Presented) The router of claim 40 wherein the buffer subsystem re-

2   tains a given packet if the new weighted average free queue depth is above a maximum

3   threshold associated with the class of service to which the packet is assigned.

1   44.   (Previously Presented) The router of claim 37 wherein the scheduler selects

2   packets for transfer through each output port based on weighting factors associated with

3   the respective X classes of service.

1   45.   (currently amended) An apparatus for routing packets through a router that sup-

2   ports a plurality, X, of classes of service, the apparatus comprising:

3   means for receiving packets through one or more input ports and assigning the

4   packets to X*Y classes of service, where Y represents a number and * represents multi-

5   plication;

6   means for retaining <u>or discarding</u> packets based on probabilities of discard associ-

7   ated with the X*Y classes of service in a multiple storage location buffer that links avail-

8   able storage locations to a free queue; and

5

9   means for transferring the packets through one or more output ports based on the

10   X classes of service.

1   46.   (Previously Presented)   The apparatus of claim 45, further including:

2   means for associating packets assigned to the X*Y classes of service with the X

3   classes of service supported by the apparatus; and

4   means for assigning to the respective packets one of Y associated levels of prior-

5   ity, each level of priority being associated with a different probability of packet loss.

1   47.   (Previously Presented) The apparatus of claim 46, further comprising:

2   means for determining a new weighted average depth for the free queue; and

3   means for determining a probability of discard for a given packet if the new

4   weighted average free queue depth falls below a predetermined maximum threshold as-

5   sociated with the class of service to which the packet is assigned.

1   48.   (Previously Presented) The apparatus of claim 47, wherein the means for retain-

2   ing packets further comprises:

3   means for discarding a given packet if the new weighted average free queue depth

4   is less than a minimum threshold associated with the class of service to which the packet

5   is assigned.

1   49.   (Previously Presented) The apparatus of claim 47, wherein the means for retaining

2   packets further comprises:

3   means for retaining a given packet if the new weighted average free queue depth

4   is greater than a maximum threshold associated with the class of service to which the

5   packet is assigned.

1   50.   (currently amended) A computer-readable media, comprising:

2   instructions for execution in a processor for the practice of a method, said

3   method having the steps,

4   receiving packets through one or more input ports and assigning the pack-

5   ets to X*Y classes of service, where * represents multiplication, and Y represents

6   a number,

7   retaining packets based on probabilities of discard associated with the

8   X*Y classes of service in a multiple storage location buffer that links available

9   storage locations to a free queue; and

10   transferring the packets through one or more output ports based on the X

11   classes of service.

1   51.   (Previously Presented) The computer-readable media of claim 50, wherein the

2   method further comprises the steps of:

3   associating packets assigned to the X*Y classes of service with the X

4   classes of service supported by the apparatus; and

5   assigning to the respective packets one of Y associated levels of priority,

6   each level of priority being associated with a different probability of packet loss.

1   52.   (previously presented) The computer-readable media of claim 51, wherein the

2   method further comprises the steps of:

3   determining a new weighted average depth for the free queue; and

4   determining a probability of discard for a given packet if the new weighted

5   average free queue depth falls below a predetermined maximum threshold associ-

6   ated with the class of service to which the packet is assigned.

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1   53.   (Previously Presented) The computer-readable media of claim 52, wherein the

2   method further comprises the step of:

3   discarding a given packet if the new weighted average free queue depth is

4   less than a minimum threshold associated with the class of service to which the

5   packet is assigned.

1   54.   (Previously Presented) The computer-readable media of claim 52, wherein the

2   method further comprises the step of:

3   retaining a given packet if the new weighted average free queue depth is

4   greater than a maximum threshold associated with the class of service to which

5   the packet is assigned.

1   55.   (currently amended) Electromagnetic signals propagating on a computer network,

2   comprising:

3   instructions for execution on a processor for the practice of a method, said

4   method having the steps,

5   receiving packets through one or more input ports and assigning the pack-

6   ets to X*Y classes of service, where * represents multiplication;

7   retaining or discarding packets based on probabilities of discard associated

8   with the X*Y classes of service in a multiple storage location buffer that links

9   available storage locations to a free queue; and

10   transferring the packets through one or more output ports based on the X

11   classes of service.

1   56.   (Previously Presented) The electromagnetic signals of claim 55, wherein the

2   method further comprises the steps of:

3   associating packets assigned to the X*Y classes of service with the X

4   classes of service supported by the apparatus; and

5   assigning to the respective packets one of Y associated levels of priority,

6   each level of priority being associated with a different probability of packet loss.

1   57.   (Previously Presented) The electromagnetic signals of claim 56, wherein the

2   method further comprises the steps of:

3   determining a new weighted average depth for the free queue; and

4   determining a probability of discard for a given packet if the new weighted

5   average free queue depth falls below a predetermined maximum threshold associ-

6   ated with the class of service to which the packet is assigned.

1   58.   (Previously Presented) The electromagnetic signals of claim 57, wherein the

2   method further comprises the step of:

3   discarding a given packet if the new weighted average free queue depth is

4   less than a minimum threshold associated with the class of service to which the

5   packet is assigned.

1   59.   (Previously Presented) The electromagnetic signals of claim 57, wherein the

2   method further comprises the step of:

3   retaining a given packet if the new weighted average free queue depth is

4   greater than a maximum threshold associated with the class of service to which

5   the packet is assigned.